Amendments to the Specification:

Please replace paragraphs 0005, 0008, 0013, 0015, 0025, 0030, 0031, 0041 and 0043 with the following amended paragraphs:

[0005] Additionally, currently available stent delivery devices are not well-adapted for treating vascular lesions that are very long and/or in curved regions of a vessel. Current stents have a discrete length that is relatively short due to their stiffness. If such stents were made longer, to treat longer lesions, they would not conform well to the curvature of vessels or to the movement of vessels on the surface of the beating heart. On the other hand, any attempt to place multiple stents end-to-end in longer lesions is hampered by the inability to maintain appropriate inter-stent spacing and to prevent overlap of adjacent stents. Such shortcomings in the prior art are addressed by the inventions described in U.S. Patent Application Serial No. 10/412714 now U.S. Patent No. 7,137,993 B2 (Attorney Docket No. 21629-000330), entitled "Apparatus and Methods for Delivery of Multiple Distributed Stents," filed on April 10, 2003; and U.S. Patent Application Serial No. 10/637713 (Attorney Docket No. 21629-000340), entitled "Apparatus and Methods for Delivery of Multiple Distributed Stents," filed on August 8, 2003; both applications assigned to the assignee of the present invention, and both applications being hereby incorporated fully by reference.

[0008] 2. Description of the Background Art. U.S. Patent Application Serial Nos. 10/412714 (now U.S. Patent No. 7,137,993 B2) and 10/637713, previously incorporated by reference, describe apparatus and methods for delivery of multiple distributed stents. U.S. Patent Nos. 6,485,510 and 6,258,117 to Camrud et al. describe segmented stents with breakable connections between the segments. U.S. Patent Application Publication No. 2002/0156496 (inventor Chermoni) describes a catheter for carrying stents including a stent positioner. U.S. Patent No. 6,143,016 to ~~Beam~~ Bleam et al. describes a stent delivery sheath. U.S. Patent No. 5,807,398 to Shaknovich describes a shuttle stent delivery catheter. U.S. Patent Nos. 5,571,086

(Kaplan et al.) and 5,776,141 (Klein et al.) describe an expandable sleeve for placement over a balloon catheter for the delivery of one or two stent structures to the vasculature. U.S. Patent No. 5,697,948 to Marin et al. describes a catheter for delivering stents covered by a sheath. Patent application serial numbers 2003/0139797 (Johnson) and 2003/0114919 (McQuiston) describe covered segmented stents.

[0013] In some embodiments, the shuttle may be slidably disposed over the sheath and the catheter shaft. The stent segments may either be fixed to the shuttle until they are expanded into a deployed position or slidably disposed along the shuttle. In the latter case, the device may also include a ~~stent-pushing~~ stent-pushing member disposed over the shuttle, proximal to the plurality of stent segments, for advancing the stent segments along the shuttle in a direction from proximal to distal. In such embodiments, an abutment may be provided at or near the distal end of the shuttle for preventing the plurality of stent segments from being advanced beyond the distal end of the shuttle.

[0015] In another aspect of the invention, a stent delivery device for delivering a plurality of stent segments to a treatment site comprises: a catheter shaft having a proximal end and a distal end; an expandable member coupled with the catheter shaft near the distal end; an axially movable sheath disposed over at least part of the catheter shaft and the expandable member; a shuttle disposed over at least part of the catheter shaft and the expandable member, at least part of the shuttle being radially expandable; a plurality of stent segments slidably disposed along the shuttle; and a ~~stent-pushing~~ stent-pushing member disposed over the shuttle, proximal to the plurality of stent segments, for advancing the stent segments distally along the shuttle. Again, moving the sheath axially toward the proximal end of the catheter shaft will expose at least part of the expandable member, allowing it to expand against the shuttle to cause the shuttle to radially expand, causing at least one of the plurality of stent segments to expand.

[0025] Stent delivery devices of the present invention generally include a shuttle for carrying multiple stent segments, so that the stent segments need not be placed on, or advanced directly over, an expandable balloon member of the device. The shuttle is disposed over, and at least partly expandable by, an expandable member such as a balloon, to expand and deploy the stent segments. In some embodiments, the shuttle is positioned outside the expandable member and a sheath, such that when the sheath is ~~withdrawn~~ withdrawn, part of the expandable member is exposed to expand against the shuttle, thus expanding and deploying one or more stent segments. In other embodiments, the shuttle may be positioned inside the sheath such that withdrawing the sheath allows the expandable member and the shuttle to expand to deploy one or more stent segments. In various embodiments, stent segments may either be fixed on the shuttle or may be slidably disposed along the shuttle. In slidable embodiments, the device may further include a ~~stent-pushing~~ stent-pushing member for advancing the stent segments distally along the shuttle and/or an abutment for preventing stent segments from being pushed off the distal end of the shuttle.

[0030] Shaft 27 has a proximal end 50 to which is mounted an inflation adaptor 52 (which could also be formed integrally with handle 38). Inflation adaptor 52 is configured to be fluidly coupled to an inflation device 54, which may be any commercially available balloon inflation device such as those sold under the trade name "Indeflator ™," available from Advanced Cardiovascular Systems of Santa Clara, CA. Inflation adaptor 52 is in fluid communication with expandable member 24 via an inflation lumen in shaft 27 to enable inflation of expandable member 24. For further description of devices and methods for delivering distributed stents, as well as various embodiments of stents themselves, reference may be made to U.S. Patent Application Serial Nos. 10/412714 (now U.S. Patent No. 7,137,993 B2) and 10/637713, previously incorporated by reference.

[0031] As mentioned above and described in more detail below, the configuration of stent delivery catheter 20 make take any of a number of alternative forms. For example, in Figure 2

shuttle 21 is disposed within sheath 25a and around expandable member 24. In an alternative embodiment, shuttle 21 may be disposed outside of ~~sheath 25b~~ sheath 25a. In either of these embodiments, shuttle 21 may comprise a relatively long tubular member, perhaps extending much of the length of catheter 20, or alternatively may be a tubular member disposed along only a distal portion of catheter 20. Various shuttles 21 may be either fixed or slidable relative to shaft 27 and/or sheath 25. Stents 30 or stent segments 32 may be mounted on shuttle 21 in fixed or slidable fashion, in various embodiments, with slidable embodiments often including a ~~stent pushing~~ stent-pushing member for advancing the segments 32. Therefore, Figure 1 depicts only one exemplary embodiment of a stent delivery device and in no way should be interpreted to limit the scope of the invention.

[0041] Turning now to Figure 4, a distal end of another embodiment of a stent delivery catheter 80 has shuttle 21c again positioned within a sheath 25c. In this embodiment, however, stent segments 32 are slidably disposed along shuttle 21c. In such embodiments, stent segments 32 may be advanced along shuttle 21c using a proximally positioned stent pushing member 82. ~~Stent pushing~~ stent-pushing member 82 may be constructed of a variety of biocompatible polymers or metals, preferably being stainless steel or Nitinol. To prevent stent segments 32 from advancing too far and falling of the distal end of shuttle, an annular ridge 86 or other abutment may be included on shuttle 21c to act as a stop to the most distal stent segment 32. Such embodiments may also include one or more valves 84 disposed on the inner surface of sheath 25c for allowing a physician to better regulate the number of stent segments 32 that pass through sheath 25c. Such valves are described in copending U.S. Patent Application Serial No. 10/412714 (now U.S. Patent No. 7,137,993 B2, which was previously incorporated by reference. Valve 84 also enables the physician to retract stent segments 32 within sheath 25c, thereby creating suitable spacing between segments 32 for deployment without interference between adjacent segments 32.

[0001] In another embodiment, with reference now to Figure 5, a stent delivery catheter 90 includes axially slidable sent segments 32 on a shuttle 21d disposed outside of a sheath 25d. Again, a ~~stent-pushing~~ stent-pushing member 82 is included in catheter device 90, and shuttle 21d includes a annular ridge 86. Sheath 25d is axially slidable over expandable member 24 to selectively expose a desired length of expandable member 24.

[0043] Referring now to Figures 6A-6D, a method for delivering stent segments is shown, though for purposes of clarity no vasculature or other lumen is shown. Generally, a stent delivery catheter 60 will be advanced through a patient's vasculature or other lumen to a desired location for delivering stent segments 32. At that point, sheath 25a may be withdrawn or retracted proximally, as shown by the two proximally directed arrows in Figure 6A, to expose at least part of expandable member 24 within shuttle 21A. Exposed expandable member 24 may then be expanded, as shown in Figures 6B and 6C. Upon such expansion, expandable member 24 contacts and expands an expandable portion of shuttle 21a, which in turn causes one or more stent segments 32 to expand, as shown in Figure 6C. When expandable member 24 is subsequently deflated, stent segments 32 remain expanded and in place, as shown in Figure 6D. Shuttle 21a, however, resumes its original shape. A physician may then reposition delivery catheter 60 and retract sheath 25a and expandable member 24 further proximally and expand expandable member 24 and shuttle 21a to deploy additional stent segments 32. When a procedure is finished, a physician may advanced sheath 25a distally to cover expandable member 24. The method may further include advancing stent segments 32 with a ~~stent-pushing~~ stent-pushing member, sliding shuttle 21a, and using a valve to control stent advancement, using the catheter embodiment of Fig. 4. Various embodiments of the method may be used by adding, subtracting or substituting steps without departing from the scope of the invention.